

REMARKS

Favorable reconsideration and allowance of the claims of the present application are respectfully requested.

The present application contains 30 pending claims, namely, Claims 2-31, among which Claims 2-13, 30, and 31 are rejected and Claims 14-29 are withdrawn from consideration.

In the Office Action dated January 11, 2006, Claims 2-13, 30, and 31 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over JP 2002-107938 to Hatakeyama et al. (hereinafter “Hatakeyama et al.”) in view of U.S. Patent No. 6,420,088 to Angelopoulos et al. (hereinafter “Angelopoulos et al.”) and U.S. Patent No. 6,767,689 to Pavelcheck et al. (hereinafter “Pavelcheck et al.”). Specifically, the Examiner alleges that Hatakeyama et al. disclose an antireflective coating composition containing a polymer having Si-(Si)_n moieties and a reactive site of alcohol, a crosslinking agent CR2, and an acid generator AG1 (paragraphs [0043] and [0045]). The Examiner also asserts that Angelopoulos et al. disclose a polymer having pendant chromophore moieties and Pavelcheck et al. disclose the use of a resin having pendant chromophore moieties in an antireflective composition to absorb undesired radiation. Thus, the Examiner concludes that it would have been obvious to one skilled in the art to incorporate the chromophore moieties disclosed in Angelopoulos et al. and Pavelcheck et al. into the polymers disclosed in Hatakeyama et al. thereby obtaining the polymer of the present invention.

Before addressing the merits of the above §103(a) rejection, applicants respectfully draw the Examiner’s attention to the machine-assisted English translation of JP 2002-107938 (hereinafter “the machine-assisted translation”) accompanied with the outstanding Office Action. Specifically, applicants respectfully disagree with the machine-assisted

translation on the Japanese word “吸光” in paragraph [0007] of Hatakeyama et al. (column 6, lines 10, 12, 15, 17, 19, 20, 22, and 23). The machine-assisted translation has translated the Japanese word “吸光” (paragraph [0007], column 6, lines 10, 12, 15, 17, 19, 20, 22, and 23) into the English word “extinction”. However, according to POPjisyo.com, a web-based pop-up dictionary for Japanese, Chinese, and Korean, the word “吸光” in Japanese has at least two alternative English meanings, namely, “extinction” or “absorptivity”. Applicants have enclosed a printed page POPjisyo.com showing the Japanese to English translation of the word “吸光”. In view of the context of Hatakeyama et al., applicants respectfully submit that the more appropriate translation of “吸光” in paragraph [0007] of Hatakeyama et al. is “absorptivity”. Therefore, it is applicants’ opinion that the more appropriate translation of the term “吸光剂” at column 6, lines 10, 12, 17, 19, 20, 22, and 23 of Hatakeyama et al. is “absorptivity agent” or “absorbing agent”, not “extinction agent”, as translated in the machine-assisted translation.

Turning to the §103(a) rejection, applicants respectfully submit that the combined disclosures of Hatakeyama et al., Angelopoulos et al., and Pavelcheck et al. do not render the present invention obvious because there is no suggestion in the cited references which motivates one skilled in the art to modify the disclosed polymers and antireflective coating compositions in such a way so as to arrived at the presently claimed composition.

Hatakeyama et al. disclose an antireflective coating material having a high etching selectivity ratio to a photoresist. Specifically, Hatakeyama et al. disclose that a polymer having a high dry etching selection ratio to photoresist is achieved by introducing silicon-silicon bonds having sufficient absorption at 193 nm (see Hatakeyama et al., paragraph [0009], column 7, lines 10-23). It is notable that Hatakeyama et al. discuss several prior art references, including JP 7-69611, U.S. Patent No. 5,294,680, JP 6-118631, JP 6-118656, and JP 8-179509, and further

points out that all those references apply absorbing agents to antireflective coating compositions (see Hatakeyama, et al., paragraph [0007], column 6). Particularly, Hatakeyama et al. emphasize that the dry etching selection ratios of those prior art materials to photoresists are not high because the absorbing agents contain aromatic radicals and/or double bonds (see Hatakeyama et al., paragraph [0007], column 6). That is, Hatakeyama et al. believe that the disadvantage of the prior art materials, i.e., the relatively low dry etching selection ratio to photoresist, is caused by the presence of the absorbing agents containing aromatic radicals and/or double bonds. In other words, Hatakeyama et al. specifically teach away from using any absorbing agents containing aromatic radicals and/or double bonds.

It is known in the art that a chromophore refers to the absorbing moiety of a molecule that can absorb light radiation and is responsible for the color of the molecule. Angelopoulos et al. and Pavelcheck et al. both specify that the chromophore moieties disclosed therein are aromatic groups that can absorb undesired radiation (see Angelopoulos et al., column 4, lines 12-20, and Pavelcheck et al., column 2, lines 41-61). Furthermore, neither Angelopoulos et al. nor Pavelcheck et al. discloses or suggests that the chromophore moieties disclosed therein may be introduced into an antireflective coating composition comprising a polymer having Si-(Si)_n moieties. Thus, there is no motivation provided in the applied references, or otherwise of record, to incorporate the chromophore moieties disclosed in Angelopoulos et al. and Pavelcheck et al. into the polymer disclosed in Hatakeyama et al. “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Vaeck*, 947 F.2d, 488, 493, 20 USPQ 2d. 1438, 1442 (Fed.Cir. 1991).

Therefore, applicants respectfully submit that in view of Hatakeyama et al., one skilled in the art would not be motivated to introduce the chromophore moieties of Angelopoulos et al. and Pavelcheck et al. into an antireflective coating composition comprising a polymer having Si-(Si)_n moieties, as claimed in the present invention.

The §103(a) rejection also fails because one skilled in the art would not reasonably expect that an antireflective coating composition comprising both a polymer having Si-(Si)_n moieties and chromophore moieties having aromatic groups would have a desirable high etching selectivity ratio to photoresist since Hatakeyama et al. specifically teach that absorbing moieties having aromatic groups can reduce the etching selectivity ratio of a polymer to photoresist.

The rejection under §103(a) has been obviated, therefore, reconsideration and withdrawal thereof is respectfully requested.

In view of the above remarks, it is firmly believed that the present application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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